IN THE CLAIMS

Please amend the claims pursuant to 37 C.F.R. § 1.121 (c) as per direction. Applicant submits a marked copy of the changes to the claims.

1.   (Currently Amended) A <u>computer-implemented</u> reduction processing method comprising:

an offset figure generating step for generating, based on a geometric figure having a plurality of vertices, an offset figure by translating sides, formed by joining said vertices, inwardly of said geometric figure by a distance equal to a prescribed sizing amount;

an offset locus line segment generating step for generating an offset locus line segment by joining each of said vertices to an offset vertex corresponding to said each vertex, said offset vertex being located on said offset figure;

an intersection point detecting step for detecting a first intersection point at which offset locus line segments associated with an adjacent pair of said vertices intersect each other; an offset vertex deleting step for deleting the offset vertices each located at one end of one of the offset locus line segments intersecting at said first intersection point; and

an offset figure revising step for revising said offset figure by finding a second intersection point at which offset figure line segments, forming said offset figure by joining said offset vertices, intersect each other, and by setting said second intersection point as an offset vertex in place of said deleted offset vertices.

2.   (Currently Amended) A <u>computer-implemented</u> reduction processing method as claimed in claim 1, wherein

in said intersection point detecting step, said detected first

intersection point is sorted in order of increasing distance from the side of said geometric

figure which is associated with said first intersection point, and

in said offset vertex deleting step, the offset vertices associated with

said first intersection point are deleted in accordance with said sorted order.

3.   (Currently Amended) A computer-implemented reduction processing

method as claimed in claim 1 or 2, wherein

in said intersection point detecting step, if two offset figure line

segments extending from the respective offset vertices associated with said detected first

intersection point are parallel to each other, an imaginary straight line passing through said

first intersection point and extending parallel to said two offset figure line segments is

drawn, third intersection points are found each defining a point at which an offset locus line

segment associated with the offset vertex at an opposite end of one of said two offset figure

line segments intersects said imaginary straight line and, of said third intersection points

thus found, the third intersection point nearer to said first intersection point is selected, and

in said offset vertex deleting step, the offset vertices associated with

said sorted first intersection point and the offset vertex on the offset locus line segment

associated with said selected third intersection point are deleted.

4.   (Original) A computer readable storage medium having a reduction

processing program stored thereon for causing a computer to execute program steps

comprising:

an offset figure generating step for generating, based on a geometric

figure having a plurality of vertices, an offset figure by translating sides, formed by joining

said vertices, inwardly of said geometric figure by a distance equal to a prescribed sizing amount;

an offset locus line segment generating step for generating an offset locus line segment by joining each of said vertices to an offset vertex corresponding to said each vertex, said offset vertex being located on said offset figure;

an intersection point detecting step for detecting a first intersection point at which offset locus line segments associated with an adjacent pair of said vertices intersect each other;

an offset vertex deleting step for deleting the offset vertices each located at one end of one of the offset locus line segments intersecting at said first intersection point; and   an offset figure revising step for revising said offset figure by finding a second intersection point at which offset figure line segments, forming said offset figure by joining said offset vertices, intersect each other, and by setting said second intersection point as an offset vertex in place of said deleted offset vertices.

5.   (Original) A computer readable storage medium having a reduction processing program stored thereon for causing a computer to execute said program steps as claimed in claim 4, wherein

in said intersection point detecting step, said detected first intersection point is sorted in order of increasing distance from the side of said geometric figure which is associate with said first intersection point, and

in said offset vertex deleting step, the offset vertices associated with said first intersection point are deleted in accordance with said sorted order.

6.   (Original) A computer readable storage medium having a reduction

processing program stored thereon for causing a computer to execute said program steps as

claimed in claim 4 or 5, wherein

in said intersection point detecting step, if two offset figure line

segments extending from the respective offset vertices associated with said detected first

intersection point are parallel to each other, an imaginary straight line passing through said

first intersection point and extending parallel to said two offset figure line segments is

generated, third intersection points are found each defining a point at which an offset locus

line segment associated with the offset vertex at an opposite end of one of said two offset

figure line segments intersects said imaginary straight line, and of said third intersection

points thus found, the third intersection point nearer to said first intersection point is

selected, and

in said offset vertex deleting step, the offset vertices associated with

said sorted first intersection point and the offset vertex at said opposite end of said offset

locus line segment associated with said selected third intersection point are deleted.

7.   (Currently Amended) A computer-implemented reduction processing

method which is applied to a difference figure generated by overlaying two geometric

figures, to verify based on the size of said difference figure the validity of processing

applied to each of said geometric figures, comprising:

a first vertex set storing step for storing a set of vertices included in

said difference figure as a first vertex set;

an offset figure generating step for translating an imaginary straight

line from each side of said difference figure inwardly of said figure by a distance equal to a

prescribed sizing amount and thereby generating an offset figure bounded by said

imaginary straight lines, and for storing a set of offset vertices included in said offset figure

as a second vertex set;

an offset locus line segment generating step for generating an offset

locus line segment by joining each vertex of said difference figure to one of said offset

vertices that corresponds to said each vertex;

an intersection point detecting step for detecting the presence or

absence of a first intersection point at which two offset locus line segments extending from

adjacent vertices of said difference figure intersect each other;

a sorting step for sorting said first intersection point in order of

increasing distance, based on the distance between said first intersection point and the side

of said difference figure which is associated with said two offset locus line segments

intersecting at said first intersection point; and

a vertex revising step for computing a second intersection point

which defines an intersection between two offset figure sides that extend from the offset

vertices of said two offset locus line segments intersecting at said first intersection point

selected by sorting, deleting said offset vertices associated with said selected first

intersection point from said second vertex set, storing said second intersection point as a

new vertex in said second vertex set, deleting from said first vertex set the vertices of said

difference figure that are connected to said two offset locus line segments, and storing said

selected first intersection point as a new vertex of said difference figure in said first vertex

set.

8.   (Currently Amended) A computer-implemented reduction processing

method as claimed in claim 7, wherein said geometric figures are each generated by

applying a different processing system.

9.   (Currently Amended) A <u>computer-implemented</u> reduction processing

method as claimed in claim 7, wherein in said vertex revising step

when said two offset figure sides are parallel to each other, and when

said second intersection point does not exist,

a second imaginary straight line passing through said first

intersection point and parallel to said two offset figure sides is generated, third intersection

points are found each defining a point at which said second imaginary straight line

intersects one of two offset locus line segments extending from the offset vertices located at

ends of the offset figure sides associated with said first intersection point, and of said third

intersection points thus found, the third intersection point nearer to said first intersection

point is selected, and

of said parallel offset figure sides, the offset vertex associated with

the offset figure side connected to the offset locus line segment containing said selected

third intersection point and the offset vertices of the offset figure side associated with said

first intersection point are deleted from said second vertex set, an intersection point is found

at which the offset figure sides extending from said deleted offset vertices intersect each

other, and said intersection point is stored in said second vertex set as a new vertex in place

of said deleted vertices.

10.   (Original) A computer readable storage medium having a reduction

processing program stored thereon for causing a computer to execute program steps

wherein reduction processing is applied to a difference figure generated by overlaying two

geometric figures, to verify, based on the size of said difference figure, the validity of

processing applied to each of said geometric figures, said program steps comprising:

a first vertex set storing step for storing a set of vertices included in said difference figure as a first vertex set;

an offset figure generating step for translating an imaginary straight line from each side of said difference figure inwardly of said figure by a distance equal to a prescribed sizing amount and thereby generating an offset figure bounded by said imaginary straight lines, and for storing a set of offset vertices included in said offset figure as a second vertex set;

an offset locus line segment generating step for generating an offset locus line segment by joining each vertex of said difference figure to one of said offset vertices that corresponds to said each vertex;

an intersection point detecting step for detecting the presence or absence of a first intersection point at which two offset locus line segments extending from adjacent vertices of said difference figure intersect each other;

a sorting step for sorting said first intersection point in order of increasing distance, based on the distance between said first intersection point and the side of said difference figure which is associated with said two offset locus line segments intersecting at said first intersection point; and

a vertex revising step for computing a second intersection point which defines an intersection between two offset figure sides that extend from the offset vertices of said two offset locus line segments intersecting at said first intersection point selected by sorting, deleting said offset vertices associated with said selected first intersection point from said second vertex set, storing said second intersection point as a new vertex in said second vertex set, deleting from said first vertex set the vertices of said difference figure that are connected to said two offset locus line segments, and storing said selected first intersection point as a new vertex of said difference figure in said first vertex

set.

11.   (Original) A computer readable storage medium as claimed in claim 10, wherein said geometric figures are each generated by applying a different processing system.

12.   (Original) A computer readable storage medium as claimed in claim 10 or 11 wherein, in said vertex revising step,

when said two offset figure sides are parallel to each other, and when said second intersection point does not exist,

a second imaginary straight line passing through said first intersection point and parallel to said two offset figure sides is generated, third intersection points are found each defining a point at which said second imaginary straight line intersects one of two offset locus line segments extending from the offset vertices located at ends of the offset figure sides associated with said first intersection point, and of said third intersection points thus found, the third intersection point nearer to said first intersection point is selected, and

of said parallel offset figure sides, the offset vertex associated with the offset figure side connected to the offset locus line segment containing said selected third intersection point and the offset vertices of the offset figure side associated with said first intersection point are deleted from said second vertex set, an intersection point is found at which the offset figure sides extending from said deleted offset vertices intersect each other, and said intersection point is stored in said second vertex set as a new vertex in place of said deleted vertices.